Appendix F

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PROCEDURES FOR THE CONTROL OF RUNOFF INTO STORM DRAINS AND WATERCOURSES

Implementation of the procedures contained herein is a condition of all Public Works permits and all Building permits.

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INTRODUCTION

Storm water runoff and other water discharges from construction sites contribute to our ocean and creeks being polluted. Preventing these pollutants from entering the storm water system is vital to clean creeks and open beaches. The City of Santa Barbara Municipal Code Title 16 prohibits the discharge of any pollutants into the storm water system. The following procedures are intended to implement Title 16 on all construction projects.

Implementation of the procedures contained herein is a condition of all Public Works permits and all Building permits.

STANDARD SPECIFICATIONS

The work covered by this specification section, Procedures for the Control of Runoff Into Storm Drains and Watercourses, shall be performed in accordance with the Standard Specifications for Public Works Construction (1997 edition) of the Southern California Chapter American Public Works Association; with the Caltrans Best Management Practices (BMP's) Manual; and with the Caltrans Standard Specifications (current edition), where referenced herein.

In case of conflict between the other references cited above and this specification section, Procedures for the Control of Runoff Into Storm Drains and Watercourses, this specification section shall control.

Copies of the Caltrans Best Management Practices (BMP's) Manual may be obtained by contacting the California Department of Transportation Publications Unit,
1900 Royal Oaks Drive, Sacramento, CA 95815-3800. telephone (916) 445-3520, fax (916) 324-8997, or by logging onto the Caltrans web site at http:/www.dot.ca.gov/hq/construc/stormwater.html.

Prior to construction, the contractor and lead foreman will be required to meet with the City's Water Resources Specialist, to discuss implementation of this program for the project. Please allow two hours for this meeting.

Street Sweeping and Vacuuming

I. Definition and Purpose

Practices to remove tracked sediment to prevent the sediment from entering a storm drain or watercourse.

II. Appropriate Applications

These practices are implemented anywhere sediment is tracked from the project site onto public or private paved roads, typically at points of egress.

III. Standards and Specifications

A. Do not use kick brooms or sweeper attachments.

B. Visible sediment tracking shall be swept and vacuumed on a daily basis.

C. Do not sweep up any unknown substance or any object that may be potentially hazardous

D. Adjust brooms frequently; maximize efficiency of sweeping operations.

E. After storm drain protection measures are implemented, and sweeping is finished, the street may be washed down.

Sand Bag Barrier

I. Definition and Purpose

A sandbag barrier is a temporary linear sediment barrier consisting of stacked sandbags, designed to intercept and slow the flow of sediment-laden sheet flow runoff. Sandbag barriers allow sediment to settle from runoff before water leaves the construction site. Straw wattles or fiber rolls can also be used for this purpose. Sandbags can also be used where flows are moderately concentrated, such as ditches, swales, and storm drain inlets.

II. Appropriate Applications

A. Around stockpiles.

B. To divert or direct flow or create a temporary sediment basin.

C. Along the perimeter of vehicle and equipment fueling and maintenance areas or chemical storage areas.

D. To capture and detain non-storm water flows until proper cleaning operations occur.

E. To temporarily close or continue broken, damaged or incomplete curbs.

F. To prevent sediment from washing on to roads.

III. Standards and Specifications

A. ***Sandbag Material:*** Sandbag shall be woven polypropylene, polyethylene or polyamide fabric, minimum unit weight 135 g/m^2 (four ounces per square yard), mullen burst strength exceeding 2,070 kPa (300 psi) in conformance with the requirements in ASTM designation D3786, and ultraviolet stability exceeding 70% in conformance with the requirements in ASTM designation D4355. Use of burlap is acceptable for short term use. (less than 2 weeks)

B. ***Sandbag Size:*** Each sand-filled bag shall have a length of 450 mm (18 in), width of 300 mm (12 in), thickness of 75 mm (3 in), and mass of approximately 15 kg (33 lb.). Bag dimensions are nominal, and may vary based on locally available materials. Alternative bag sizes shall be submitted to the Engineer for approval prior to deployment.

C. ***Fill Material:*** All sandbag fill material shall be non-cohesive, Class I or Class 2 permeable material free from clay and deleterious material, conforming to the provisions in Section 68-1.025 “Permeable Material,” of the Caltrans Standard Specifications. The requirements for the Durability Index and Sand Equivalent do not apply. Fill material is subject to approval by the Engineer.

Sand Bag Barrier; (continued)

IV. Maintenance and Inspection

A. Contractor shall Inspect sandbag barriers before and after each use.

B. Inspect sandbag barriers for sediment accumulations and remove sediments when accumulation reaches one-third the barrier height. Removed sediment shall be incorporated in the project at locations designated by the Engineer or disposed of in conformance with the Standard Specifications.

C. Remove sandbags when no longer needed. Remove and dispose of sediment accumulation, clean, re-grade, and stabilize the area.

Storm Drain Inlet Protection

I. Definition and Purpose

Devices used at storm drain inlets that are subject to runoff from construction activities to detain and/or to filter sediment-laden runoff to allow sediment to settle and/or to filter sediment prior to discharge of storm water into storm water drainage systems or watercourses.

II. Appropriate Applications

A. Where ponding will not encroach into highway traffic.

B. Where sediment laden surface runoff has the potential to enter an inlet.

C. Whenever street is washed down

D. For dewatering purposes.

III. Standards and Specifications

A. Identify existing and/or planned storm drain inlets that have the potential to receive sediment-laden surface runoff. If storm drain inlet protection is needed, use Type 3 D1 protection or other approved measures.

B. ***DI Protection Type 3 – Sandbag Barrier –*** The sandbag barrier (Type 3) is illustrated on Page 7. Flow from a severe storm shall not overtop the curb. In areas of high clay and silts, use filter fabric and gravel as additional filter media. Construct sandbags in accordance with "Sandbag Barrier".

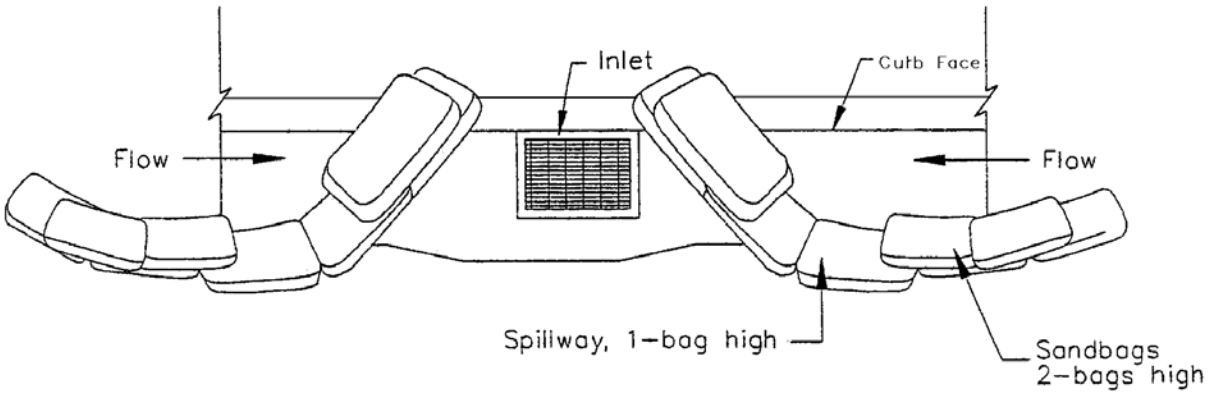
C. Inspect bags for holes, gashes, and snags.

D. Check sandbags for proper arrangement or displacement (per attached detail) Remove the sediment behind the barrier when it reaches one-third the height of the barrier. Removed sediment shall be incorporated in the project at locations designated by the RE or disposed of outside the highway right-of-way in conformance with the Standard Specifications.

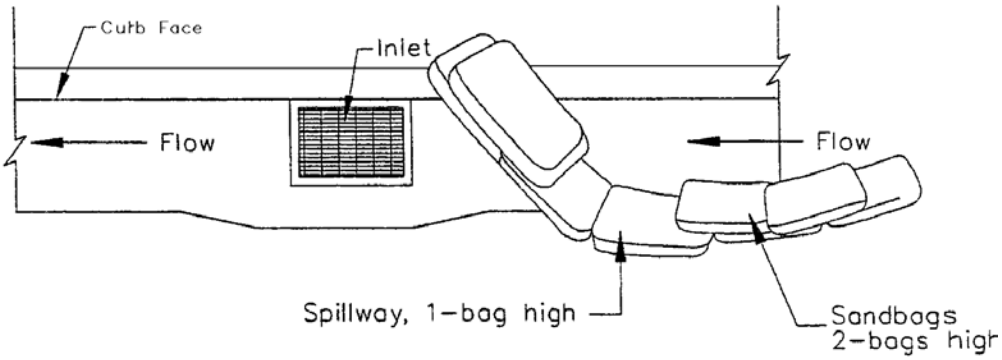
E. Remove all inlet protection devices when the inlet protection is no longer needed.

F. Clean and/or re-grade area around the inlet as appropriate, and clean the inside of the storm drain inlet as it must be free of sediment and debris at the time of final inspection.

Storm Drain Inlet Protection; (continued)



TYPICAL PROTECTION FOR INLET ON SUMP



TYPICAL PROTECTION FOR INLET ON GRADE

D1 Protection Type 3
Notes

NOTES:

1. Intended for short-term use.
2. Use to filter non-storm water flow.
3. Allow for proper maintenance and cleanup.
4. Bags must be removed after adjacent operation is completed.
5. Not applicable in areas with high silts and clays without filter fabric.
6. Silt or sediment must be removed and disposed of in accordance with the Standard Specifications after operations are completed. Washing into storm drains is prohibited.

Stabilized Construction Entrance/Exit

I. Definition and Purpose

a. A stabilized construction access is a defined point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.

II. Appropriate Applications

a. Use at construction sites where dirt or mud has the potential to be tracked onto public roads.

b. Use at construction sites where dust is a problem during dry weather conditions.

III. Standards and Specifications

a. Limit the points of entrance/exit to the construction site.

b. Limit speed of vehicles to control dust.

c. Properly grade each construction entrance/exit to prevent runoff from leaving the construction site.

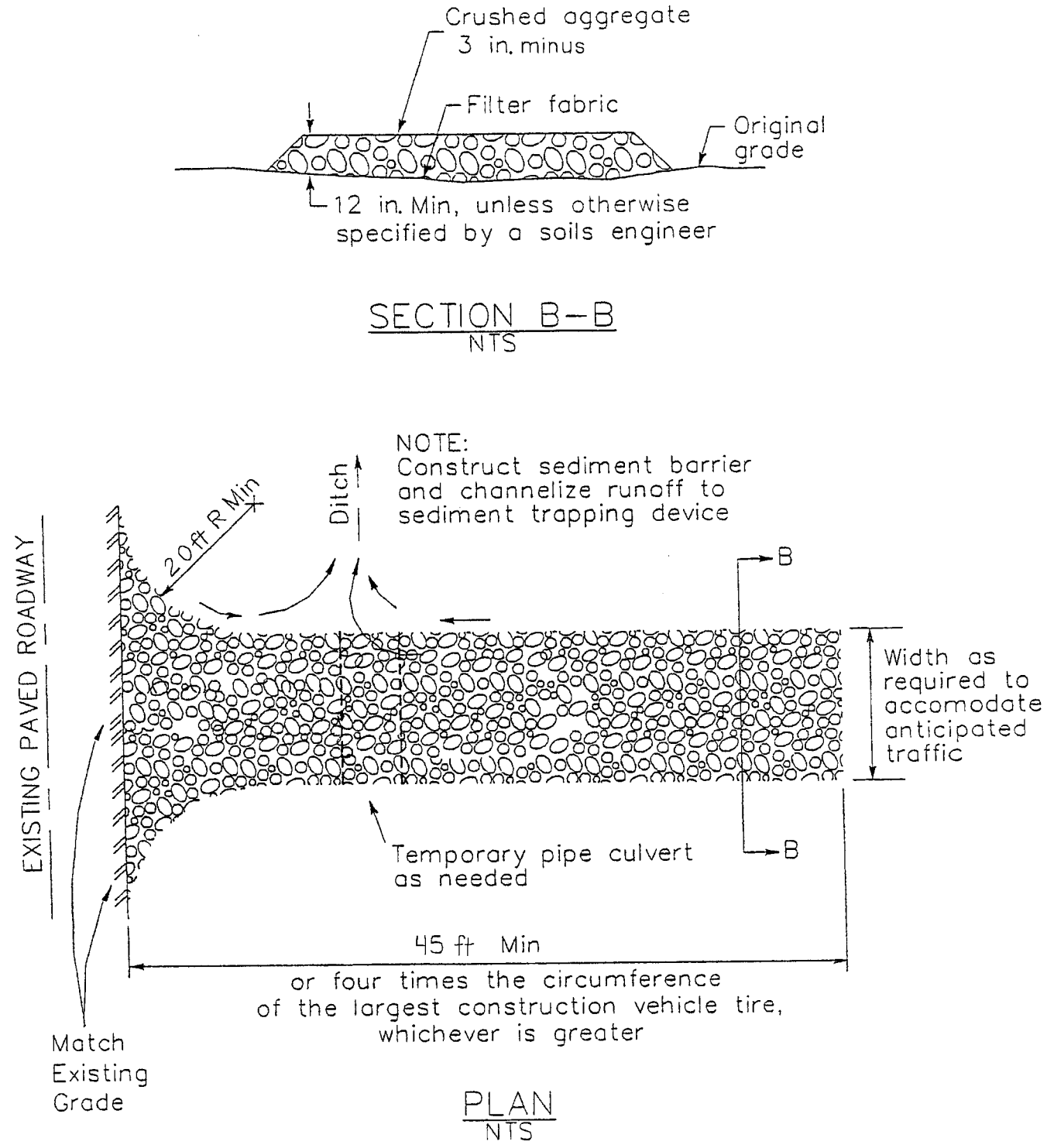
d. Route runoff from stabilized entrances/exits through an approved sediment-trapping device before discharge.

e. Select construction access stabilization (aggregate, asphaltic concrete, concrete) based on longevity, required performance, and site conditions. The use of asphalt concrete (AC) grindings for stabilized construction access/roadway is not allowed. Use Type I.

f. If aggregate is selected, place crushed aggregate over geo-textile fabric to at least 300 mm (12 in) depth, or place aggregate to a depth recommended by a geotechnical soils engineer. A crushed aggregate of 75 mm (3 inch minus) shall be used, with the gradation percentage approved by the engineer.

g. All employees, subcontractors, and suppliers shall be required to utilize the stabilized construction access.

Stabilized Construction Entrance/Exit; (continued)



Stabilized Construction Entrance/Exit (Type 1)

Water Conservation Practices

I. Definition and Purpose

Water conservation practices are activities that use water during the construction of a project in a manner that avoids causing erosion and/or the transport of pollutants offsite.

II. Appropriate Applications

A. Water conservation practices are implemented wherever water is used.

B. Applies to all construction projects.

III. Standards and Specifications

A. Keep water equipment in good working condition.

B. Repair water leaks promptly.

C. Do not use water or toxic agents to clean construction areas. Paved areas shall be swept and vacuumed.

D. Direct non-contaminated construction water runoff to areas where it can soak into the ground.

E. Apply water for dust control in accordance with the Caltrans Standard Specifications.

Dewatering Operations

I. Definition and Purpose

Dewatering operations are practices that manage the discharge of pollutants from groundwater and accumulated precipitation dewatering operations. This section does not apply to work within watercourses, where other, more specific, rules apply

II. Appropriate Applications

A. Removal of uncontaminated groundwater.

B. Removal of accumulated rainwater from work areas.

III. Standards and Specifications

A. Contractor shall provide 48 hours notification to the Engineer of planned discharges.

B. Discharges must comply with regional and watershed-specific discharge requirements.

C. Ensure that dewatering discharges do not cause erosion at the discharge point.

D. A filtration device may be substituted for a desilting basin or sediment trap if the Contractor can demonstrate, to the Engineer's satisfaction, that the filtration device provides equivalent or greater removal of suspended solids than the basin.

E. Filter bags may be used for small-scale dewatering operations.

Paving and Grinding Operations

I. Definition and Purpose

Procedures that minimize pollution of storm water runoff during paving operations, including new paving and preparation of existing paved surfaces for overlays.

II. Appropriate Applications

These procedures are implemented where paving, surfacing, resurfacing, or sawcutting, may pollute storm water runoff or discharge to the storm drain system or watercourses.

III. Standards and Specifications

A. Substances used to coat asphalt transport trucks and asphalt spreading equipment shall not contain soap and shall be non-foaming and non-toxic.

B. Place drip pans or absorbent materials under paving equipment while not in use, to catch and/or contain drips and leaks. See also “Liquid Waste Management”.

C. When paving involves asphaltic concrete (AC), the following steps shall be implemented to prevent the discharge of grinding residue, uncompacted or loose AC, tack coats, equipment cleaners, or unrelated paving materials.

1) Do not wash sand or gravel from new asphalt into storm drains, streets, and creeks. Sweeping or other means of removal from the site shall be utilized.

2) AC grindings, pieces, or chunks used in embankments or shoulder backing must not be allowed to enter any storm drains or watercourses.

3) Collect and remove all broken asphalt and recycle when practical; otherwise, dispose in accordance with the Caltrans Standard Specification 7-1.13.

4) Any AC chunks and pieces used in embankments must be placed above the water table and covered by at least 0.3m (1 ft) of material.

5) Use only non-toxic substances to coat asphalt transport trucks and asphalt spreading equipment.

D. Drainage inlet structures and manholes shall be covered with filter fabric or tape during application of seal coat, tack coat, slurry seal, and/or fog seal.

E. Seal coat, tack coat, slurry seal, or fog seal shall not be applied if rainfall is predicted to occur during the application or curing period.

F. Clean asphalt coated equipment off-site. When cleaning dry, hardened asphalt from equipment, manage hardened asphalt debris as described in “Solid Waste Management”. Any cleaning on site shall follow the section of this specification “Vehicle and Equipment Cleaning”.

Paving and Grinding Operations; (continued)

G. Do not wash sweepings from exposed aggregate concrete into a storm drain system. Collect and return to aggregate base stockpile, or dispose of properly.

H. Allow aggregate rinse to settle. Then, either allow rinse water to dry in a temporary pit as described in “Concrete Waste Management”, or pump the water to the sanitary sewer if allowed by the local wastewater authority.

I. Do not allow saw-cut Portland Concrete Cement (PCC or AC) slurry to enter storm drains or watercourses. Residue from grinding operations shall be picked up by means of a vacuum attachment to the grinding machine, shall not be allowed to flow across the pavement, and shall not be left on the surface of the pavement. See also the sections of this specification “Concrete Waste Management”, and “Liquid Waste Management”.

J. When approved by the Engineer, stockpile material removed from roadways shall be kept away from drain inlets, drainage ditches, and watercourses.

K. Do not transfer or load bituminous material near drain inlets, the storm water drainage system or watercourses.

Illicit Connection/Illegal Discharge Detection and Reporting

I. Definition and Purpose

Procedures and practices designed for construction contractors to recognize illicit connections or illegally dumped or discharged materials on a construction site and report incidents to the Engineer.

II. Appropriate Applications

Illicit connection/illegal discharge detection and reporting is applicable anytime an illicit discharge is discovered or illegally dumped material is found on the construction site.

III. Standards and Specifications

A. Contractor shall inspect the site before beginning the job for evidence of illicit connections or illegal dumping or discharges, and shall promptly notify the Project Engineer of such conditions.

B. Contractor shall inspect the site regularly during project execution for evidence of illicit connections or illegal dumping or discharges.

C. Contractor shall observe site perimeter for evidence or potential of illicitly discharged or illegally dumped material that may enter the job site.

D. Contractor shall inspect the site regularly during the project for pungent odors coming from the drainage systems.

E. Contractor shall inspect the site regularly for discoloration or oily substances in the water or stains and residues detained within ditches, channels or drain boxes.

F. Contractor shall inspect the site regularly for abnormal water flow during the dry weather season.

G. Contractor shall inspect the site regularly for unusual flows in subdrain systems used for dewatering.

H. Contractor shall inspect the site regularly for excessive sediment deposits, particularly adjacent to or near active off-site construction projects.

Potable Water/Irrigation

I. Definition and Purpose

Potable Water/Irrigation consists of practices and procedures to reduce the possibility for the discharge of potential pollutants generated during discharges from irrigation water lines, landscape irrigation, lawn or garden watering, planned and unplanned discharges from potable water sources, water line flushing, and hydrant flushing.

II. Appropriate Applications

Implement this Policy whenever the above activities or discharges occur at or enter a construction site.

III. Standards and Specifications

A. Where possible, direct water from off-site sources around or through a construction site in a way that minimizes contact with the construction site.

B. Shut off the water source to broken lines, sprinklers, or valves as soon as possible to prevent excess water flow.

C. Protect downstream storm water drainage systems and watercourses from water pumped or bailed from trenches excavated to repair water lines using storm drain inlet protection measures.

D. Inspect irrigated areas within the construction limits for excess watering. Adjust watering times and schedules to ensure that the appropriate amount of water is being used and to minimize runoff.

E. Repair broken water lines as soon as possible or as directed by the Engineer.

Vehicle and Equipment Cleaning

I. Definition and Purpose

Procedures and practices used to minimize or eliminate the discharge of pollutants from vehicle and equipment cleaning operations to storm drain system or to watercourses.

II. Appropriate Applications

These procedures are applied on all construction sites where vehicle and equipment cleaning is performed.

III. Standards and Specifications

A. On-site vehicle and equipment washing is prohibited.

B. Cleaning of vehicles and equipment with soap, solvents or steam shall not occur on the project site unless the Engineer has been notified in advance and the resulting wastes are fully contained and disposed of outside the street right-of-way in conformance with the provisions in Section 7-1.13 of the Caltrans Standard Specifications. Resulting wastes shall not be discharged or buried within the street right-of-way.

C. Vehicle and equipment wash water shall be contained for percolation or evaporative drying away from storm drain inlets or watercourses and shall not be discharged within the street right-of-way.

D. All vehicles/equipment that regularly enter and leave the construction site must be cleaned off-site.

E. When vehicle/equipment washing/cleaning must occur on-site, and the operation cannot be located within a structure or building equipped with appropriate disposal facilities, the outside cleaning area shall have the following characteristics:

1. Located away from storm drain inlets, drainage facilities, or watercourses.

2. Paved with concrete or asphalt and bermed to contain wash waters and to prevent run-on and runoff.

3. Configured with a sump to allow collection and disposal of wash water.

4. Wash waters shall not be discharged to storm drains or watercourses.

Vehicle and Equipment Fueling

I. Definition and Purpose

Procedures and practices to minimize or eliminate the discharge of fuel spills and leaks into the storm drain system or to watercourses.

II. Appropriate Applications

These procedures are applied on all construction sites where vehicle and equipment fueling takes place.

III. Standards and Specifications

A. On-site vehicle and equipment fueling shall only be used where it's impractical to send vehicles and equipment off-site for fueling.

B. When fueling must occur on-site, the contractor shall select and designate an area to be used, subject to approval of the Engineer.

C. Equipment being fueled shall never be left unattended.

D. Absorbent spill clean-up materials and spill kits shall be available in fueling areas and on fueling trucks and shall be disposed of properly after use. The contractor shall notify the personnel performing fueling of the location of cleanup materials and spill kits.

E. Drip pans or absorbent pads shall be used during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.

F. Dedicated fueling areas shall be protected from storm water run-on and runoff, and shall be located at least 15 m (50') from downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas.

G. Nozzles used in vehicle and equipment fueling shall be equipped with an automatic shut-off to control drips. Fueling operations shall not be left unattended.

H. Protect fueling areas with berms and/or dikes to prevent run-on, runoff, and to contain spills.

I. Use vapor recovery nozzles to help control drips as well as air pollution where required by Air Pollution Control District (APCD).

J. Fuel tanks shall not be "topped off."

K. Vehicles and equipment shall be inspected by the contractor on each day of use for leaks. Leaks shall be repaired immediately or problem vehicles or equipment shall be removed from the project site.

L. Absorbent materials shall be used on small spills instead of hosing down or burying techniques.

M. Mobile fueling of construction equipment throughout the site shall be minimized. Whenever practical, equipment shall be transported to the designated fueling area.

Vehicle and Equipment Maintenance

I. Definition and Purpose

Procedures and practices to minimize or eliminate the discharge of pollutants to the storm drain system or to watercourses from vehicle and equipment maintenance procedures.

II. Appropriate Applications

These procedures are applied on all construction projects where an on-site yard area is necessary for storage and maintenance of heavy equipment and vehicles.

III. Standards and Specifications

A. Drip pans or absorbent pads shall be used during vehicle and equipment maintenance work that involves fluids, unless the maintenance work is performed over an impermeable surface in a dedicated maintenance area.

B. All fueling trucks and fueling areas are required to have spill kits and/or use other spill protection devices. Contractor instruct all personnel involved in fueling operations in proper use of spill kits and related devices.

C. Dedicated maintenance areas shall be protected from storm water run-on and runoff, and shall be located at least 15 m (50') from downstream drainage facilities and watercourses.

D. Absorbent spill clean-up materials shall be available in maintenance areas and shall be disposed of properly after use. Substances used to coat asphalt transport trucks and asphalt spreading equipment shall be non-toxic. Drainage inlet structures and manholes shall be covered with filter fabric when seal coat, tack coat, slurry seal, or fog seal is applied to adjacent surfaces.

E. Use off-site maintenance facilities.

F. Properly dispose of used oils, fluids, lubricants and spill cleanup materials.

G. Do not dump fuels and lubricants onto the ground.

H. Do not place used oil in a dumpster or pour into a storm drain or watercourse.

I. Properly dispose of or recycle used batteries.

J. Do not bury used tires.

K. Repair leaks of fluids and oil immediately.

L. Provide spill containment dikes or secondary containment around stored oil and chemical drums.

Vehicle and Equipment Maintenance; (continued)

M. Vehicles and equipment shall be inspected on each day of use. Leaks shall be repaired immediately or the problem vehicle(s) or equipment shall be removed from the project site.

N. Inspect equipment for damaged hoses and leaky gaskets routinely. Repair or replace as needed.

Stockpile Management

I. Definition and Purpose

Procedures and practices to reduce or eliminate pollution of storm water from stockpiles of soil, and paving materials such as Portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub-base or pre-mixed aggregate and asphalt binder (also called “cold mix” asphalt).

II. Appropriate Applications

Implemented in all projects that stockpile soil and paving materials.

III. Standards and Specifications

A. Protection of stockpiles is a year-round requirement.

B. Locate stockpiles away from concentrated flows of storm water, drainage courses, and inlets.

C. Protect all stockpiles from silt run-off by using a temporary perimeter sediment barrier such as silt fences, sandbag barriers, or straw wattles(fiber rolls).

D. During the rainy season, soil stockpiles shall be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times.

E. During the non-rainy season, soil stockpiles shall be either covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.

F. Stockpiles of Portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate sub-base shall be either covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.

G. Stockpiles of “cold mix” shall be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Spill Prevention and Control

I. Definition and Purpose

These are procedures and practices implemented to prevent and control spills in a manner that minimizes or prevents the discharge of spilled material to the drainage system or watercourses.

II. Appropriate Application

This Policy applies to all construction projects. Spill control procedures are implemented anytime chemicals and/or hazardous substances are stored. Substances may include, but are not limited to:

A. Fuels

B. Lubricants

C. Other petroleum distillates

III. Standards and Specifications

A. To the extent that it doesn't compromise clean up activities, spills shall be covered and protected from storm water run-on during rainfall.

B. Spills shall not be buried or washed with water.

C. Water used for cleaning and decontamination shall not be allowed to enter storm drains or watercourses and shall be collected and disposed of in accordance with "Liquid Waste Management".

D. Water overflow or minor water spillage shall be contained and shall not be allowed to discharge into drainage facilities or watercourses.

IV. Clean up and Storage Procedures

A. Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.

B. Use absorbent materials on small spills. Do not hose down or bury.

C. Semi-significant spills still can be controlled by the first responder along with the aid of the other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.

D. Clean up spills immediately.

E. If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.

Spill Prevention and Control; (continued)

F. If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.

G. If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Solid Waste Management

I. Definition and Purpose

These are procedures and practices to minimize or eliminate the discharge of pollutants to the drainage system or to watercourses as a result of the creation, stockpiling, and removal of construction site wastes.

II. Appropriate Applications

A. Solid wastes include but are not limited to:

1) Construction wastes including brick, mortar, timber, steel and metal scraps, pipe and electrical cuttings, non-hazardous equipment parts, Styrofoam and other materials used to transport and package construction materials.

2) Highway planting wastes, including vegetative material, plant containers, and packaging materials.

3) Litter, including food containers, beverage cans, coffee cups, paper bags, plastic wrappers, and smoking materials, including litter generated by the public.

III. Standards and Specifications

A. Littering on the project site shall be prohibited.

B. To prevent clogging of the storm drainage system, litter and debris removal from drainage grates, trash racks, and ditch lines shall be performed weekly.

C. Trash receptacles shall be provided in the Contractor's yard, field trailer areas, and at locations where workers congregate for lunch and break periods.

D. Litter from work areas within the construction limits of the project site shall be collected and placed in water tight dumpsters at least weekly regardless of whether the litter was generated by the Contractor, the public, or others. Collected litter and debris shall not be placed in or next to drain inlets, storm water drainage systems or watercourses.

E. Storm water run-on shall be prevented from contacting stored solid waste through the use of berms, dikes, or other temporary diversion structures or through the use of measures to elevate waste from site surfaces.

F. Solid waste storage areas shall be located at least 15 m (50') from drainage facilities and watercourses and shall not be located in areas prone to flooding or ponding.

G. Dumpster washout on the project site is not allowed.

H. Toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) shall not be disposed of in dumpsters.

Concrete Waste Management

I. Definition and Purpose

These are procedures and practices that are implemented to minimize or eliminate the discharge of concrete waste materials to the storm drain system or to watercourses.

II. Appropriate Applications

A. Concrete waste management practices are implemented on construction projects where concrete is used as a construction material or where concrete dust and debris result from demolition activities.

B. Where slurries containing Portland cement concrete (PCC) or asphalt concrete (AC) are generated, such as from sawcutting, coring, grinding, grooving, and hydro-concrete demolition.

C. Where concrete trucks and other concrete-coated equipment are washed on site, when approved by the Engineer. See also Vehicle and Equipment Cleaning.

D. Where mortar-mixing stations exist.

III. Standards and Specifications

A. PCC and AC waste shall not be allowed to enter storm drains or watercourses.

B. PCC and AC waste shall be collected and disposed of outside the highway right-of-way in conformance with section 7-1.13 of the Caltrans Standard Specifications or placed in a temporary concrete washout facility.

C. Below grade concrete washout facilities are typical. Above grade facilities are used if excavation is not practical.

D. Do not allow slurry residue from wet coring or saw-cutting AC or PCC to enter storm drains or receiving waters by:

1. Placing temporary berms or sandbags around coring or saw-cutting locations to capture and contain slurry runoff.

2. Placing straw bales, straw wattles(fiber rolls), sandbags, or gravel dams around inlets to prevent slurry from entering storm drains.

E. Vacuum slurry residue and dispose.

F. Temporary concrete washout facilities shall be located a minimum of 15 m (50 ft) from storm drain inlets, open drainage facilities, and watercourses, unless determined unfeasible by the engineer. Each facility shall be located away from construction traffic or access areas to prevent disturbance or tracking.

Concrete Waste Management; (continued)

G. Temporary concrete washout facilities shall be constructed above grade or below grade at the option of the Contractor. Temporary concrete washout facilities shall be constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.

H. Temporary washout facilities shall have a temporary pit or bermed areas of sufficient volume to completely contain all liquid and waste concrete materials generated during washout procedures.

I. Perform washout of concrete trucks in designated areas only.

J. Once concrete wastes are washed into the designated area and allowed to harden, the concrete shall be broken up, removed, and disposed of per “Solid Waste Management”.

K. Temporary concrete washout facilities shall be constructed as shown on the plans, with a recommended minimum length and minimum width of 3 m (10’), but with sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations. The length and width of a facility may be increased, at the Contractor’s expense, upon approval of the engineer.

L. Existing facilities must be cleaned, or new facilities must be constructed and ready for use once the washout is 75% full.

Sanitary/Septic Waste Management

I. Definition and Purpose

Procedures and practices to minimize or eliminate the discharge of construction site sanitary/septic waste materials to the storm drain system or to watercourses.

II. Appropriate Applications

Sanitary/septic waste management practices are implemented on all construction sites that use temporary or portable sanitary/septic waste systems.

III. Standards and Specifications

A. Temporary sanitary facilities shall be located away from drainage facilities, watercourses, and from traffic circulation. When subjected to high winds or risk of high winds, as determined by the Engineer, temporary sanitary facilities shall be secured to prevent overturning.

B. Wastewater shall not be discharged or buried within the street right-of-way.

C. Ensure that sanitary/septic facilities are maintained in good working order by a licensed service.

D. Use only reputable, licensed sanitary/septic waste haulers.

Liquid Waste Management

I. Definition and Purpose

Procedures and practices to prevent discharge of pollutants to the storm drain system or to watercourses as a result of the creation, collection, and disposal of non-hazardous liquid wastes.

II. Appropriate Applications

Liquid waste management is applicable to construction projects that generate any of the following non-hazardous liquid wastes.

A. Drilling slurries and drilling fluids.

B. Grease-free and oil-free wastewater and rinse water.

C. Dredgings.

D. Other non-storm water liquid discharges not permitted by separate permits.

III. Standards and Specifications

A. Drilling residue and drilling fluids shall not be allowed to enter storm drains and watercourses and shall be disposed of outside the street right-of-way as approved by the engineer.

B. Liquid wastes generated as part of an operational procedure, such as water-laden dredged material and drilling mud, shall be contained and not allowed to flow into drainage channels or receiving waters prior to treatment.

C. Contain liquid wastes in a controlled area, such a holding pit, sediment basin, or portable tank.

D. Containment devices must be structurally sound and leak free.

E. Do not locate containment areas or devices where accidental release of the contained liquid can threaten health or safety, or discharge to water bodies, channels, ground water, or storm drains.

F. Capture all liquid wastes running off a surface that has the potential to affect the storm drainage system, such as wash water and rinse water from cleaning walls or pavement.

G. Do not allow liquid wastes to flow or discharge uncontrolled. Use temporary dikes or berms to intercept flows and direct them to a containment area for capture.

H. If the liquid waste is sediment laden, use a sediment trap for capturing and treating the liquid waste stream, or capture in a containment device and allow sediment to settle.

I. If necessary, further treat liquid wastes prior to disposal. Treatment may include, though is not limited to, sedimentation, filtration, and chemical neutralization.

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City of Santa Barbara

Building & Safety Division

EROSION/SEDIMENTATION CONTROL POLICY

Effective July 1, 2003

EROSION / SEDIMENTATION CONTROL
AND
STORMWATER QUALITY MANAGEMENT PROGRAM

1. Introduction

This Policy identifies standards for erosion prevention, sediment control and stormwater quality management during construction, and long-term post-construction site stabilization. The provisions of this section are intended to prevent and reduce adverse impacts to the drainage system and creeks of the City of Santa Barbara. In combination with other state, federal, and local laws and ordinances, these requirements are intended to protect the beneficial uses of waters within the watershed. Also, see the City of Santa Barbara Public Works Department's Procedures for the Control of Runoff into Storm Drains and Watercourses for Public Works Construction requirements.

- Erosion prevention techniques are designed to protect soil particles from the force of rain and wind so that they will not erode. These techniques include, but are not limited to such things as construction scheduling, ground cover and plantings, and installation of erosion control matting.

- Sediment control measures are designed to capture soil particles after they have been dislodged and attempt to retain the soil particles on-site. These measures include, but are not limited to silt fences, sediment barriers, and settling or sediment detention basins. Both erosion prevention techniques and sediment control measures have appropriate uses; however, it has been shown that sediment control measures are less effective in preventing soil movement and water quality impacts than erosion prevention techniques.

- Use of ***Standard Erosion Control Measures*** (see Sect. 5) would be required for any grading or land clearing for a development project on slopes less than or equal to 15%, and where the project area is less than or equal to 1.0 acre. A listing of the Standard Erosion Control Measures to be utilized shall appear either attached to the grading plan (if one is required to be submitted), or on a plot plan (if no grading plan is required), as part of the Building , Grading, or Public Works Permit application. The site may be field checked to verify that there are no critical (unstable or highly erosive) areas on the site and the Standard Erosion Control Measures proposed are adequate.

- For project areas greater than 1.0 acre, on slopes greater than 15%, projects within the Hillside Design District or other critical areas, as determined on a case-by-case basis, a ***Detailed Erosion Control Plan*** (see Sect. 9) is required. Most projects located in the Hillside Design District will be considered to be in a potentially critical area requiring completion of a Detailed Erosion Control Plan.

2. Authorized Personnel

Persons authorized to prepare the Detailed Erosion Control Plans include:

- A Certified Professional Soil Erosion and Sediment Control Specialist,
- A California Licensed Civil Engineer,
- A California Licensed Landscape Architect,
- A California Registered Geologist, certified as an Engineering Geologist,
- A California Licensed Architect.

3. Slope Determination

Before Standard Erosion Control Measures can be applied to a project, it must be determined that the slope is not more than 15%. This is calculated according to the following procedures:

"Average slope" of a parcel of land or any portion thereof shall be computed by applying the formula (S=.00229 IL divided by A) to the natural slope of the land, before grading is commenced as determined from a topographic map conforming to National Mapping Standards and having a scale of not less than 1 inch equals 200 feet and a contour interval of not less than five feet (5'). The letters in this formula shall have the following significance:

S = The average slope of the land in percent.

I = The contour interval in feet.

L = The combined length of all contours in feet, excluding the length of contours in drainage channels and in natural water courses below the 25 year flood level.

A = The net area of parcel or portion thereof, in acres, after deducting all areas in drainage channels below the 25 year flood level, for which the slope is to be determined. (Ord. 4726, 1991; Ord. 3753, 1975; Ord. 3710, 1974; Ord. 2585, 1957.)

The City may require topographical contour mapping prepared by a licensed professional in order to determine slope.

4. Erosion Control and Stormwater Management Manuals

The ***Association of Bay Area Governments (ABAG) Manual of Standards for Erosion and Sediment Control (Second Edition, May 1995)*** should be adopted as the erosion control standards manual for planning and design in the City of Santa Barbara. Drawings and design details from this source may be used in submittal of Standard Erosion Control Measures and detailed Erosion Control Plans. Their website may be used for viewing and/or downloading of information.
www.cabmphandbooks.com/construction.asp

The ***Erosion and Sediment Control Field Manual*** available from the California Regional Water Quality Control Board, San Francisco Bay Region should be adopted as the manual for use by contractors and City inspectors in the field.

The ***California Stormwater Best Management Practices Handbooks*** available from the Stormwater Quality Task Force, March 1993, should be adopted for use in preparing Stormwater Pollution Prevention Plans (SWPPP). Separate handbooks are available for: 1) Construction Activity; 2) Industrial/Commercial; and, 3) Municipal work areas.

In addition several commercial publications and design drawings are available for preparation of Erosion Control Plans, such as Erosion Draw.

5. Standard Erosion and Sediment Control Measures

The following standard measures for soil erosion and sediment control are to be used on small projects that will implement the standards for parcels less than or equal to 1.0 acre in size, or on slopes less than 15%. Such areas cannot be located within critical areas, or within the Hillside Design District.

The techniques and methods contained and prescribed in the latest addition of the *Association of Bay Area Governments Manual of Standards for Erosion and Sediment Control Plans*, should be used along with the following additional guidance and requirements:

Gravel Construction Entrance. A gravel construction entrance is generally required where vehicle traffic is anticipated off of existing paved or graveled roads. If there is more than one vehicle access point, a

gravel construction entrance should be installed at each entrance. The responsibility for field design to meet site conditions, and maintenance of the construction entrances remains with the property owner or construction contractor. The owner/contractor shall remain responsible for the clean-up of any mud or dirt that is tracked onto streets or paved areas, even with the installation of gravel construction entrances.

Vehicles or equipment shall not enter a property adjacent to a creek, watercourse, or storm water facility unless adequate measures are installed to prevent physical erosion into the water.

Catch Basin Protection. A filter system shall be used on catch basins (drop inlets) in public and private streets, and parking areas as a means of sediment control. Alternate methods will require the approval of the City.

Sediment Filters/Barriers. For all projects, a silt fence or straw wattle dike shall be installed along the down slope edge of the disturbed area, prior to the commencement of grading. The sediment filter structures will be located so that all runoff from the construction site is filtered, or passes through a sediment detention basin prior to crossing a property line, entering a creek or entering the City storm drain system. Sediment filter structures are to be inspected regularly by City Inspection staff during inspections scheduled by the Contractor or Engineer of Record, and sediment removed when the depth of sediment is no more than one half the height of the structure. Silt fences and straw wattles shall be installed according to the standard references cited.

Straw wattles can be used as dikes to stabilize temporary channel flow lines or as a perimeter filter barrier. Straw wattles must be installed in a trench, staked and backfilled if they are to be effective in reducing flow velocity and filtering sediment from runoff.

Straw wattles should not remain in place more than 12 months after installation unless it can be determining significant deterioration has not occurred. When used as a perimeter filter, sediment should be removed when material is within 3 inches of the top of any wattle.

Silt fences should be installed where sediment from sheet flow or rill and gully erosion will enter directly onto adjacent property. When installing, it is important the fabric material be anchored into a trench and backfilled.

Maintenance of filter fences is similar to that of straw wattles in that the fabric must be inspected and needed repairs implemented after every storm event. Sediment deposits should be removed when material reaches no more than a depth of one-half the fence height.

Plastic Sheeting Plastic sheeting shall generally not be used as an erosion control measure over large areas. Plastic sheeting may be used to protect small, highly erodible areas, or to protect temporary stockpiles of material. If plastic sheeting is used, the path of concentrated flow from the plastic must be protected.

Existing Vegetation and Revegetation. As far as is practicable, existing vegetation shall be protected and left in place, in accordance with the clearing limits shown on the approved Building, Grading, or Public Works and Erosion Control Plans. The exception is where exotic plant materials are to be removed, or fire fuels reduced in accordance with an approved Plan. Work areas shall be carefully located and marked to reduce potential damage. Where existing vegetation has been removed, or the original land contours disturbed, the site shall be revegetated, and the vegetation established, as soon as practicable, but no later than **October 15.**

Slope Protection: Hydroseeding alone will normally not be considered satisfactory erosion protection for disturbed slopes steeper than 4V:1H. These areas should also be protected using straw and tackifier. The installation of erosion control blankets should be considered for all disturbed slopes steeper than 2.5H:1V and greater than 20 feet in slope length. Installation of straw wattles staked on contour should be considered for all slopes steeper than 4H:1V, with slope lengths greater than 30 feet. Straw wattles or silt

fencing should be installed at the toe of all slopes steeper than 4H:1V, and along (just below) top of bank along all creeks.

Wet Weather Measures. On sites where vegetation and ground cover have been removed from more than 0.5 acre of land, vegetative ground cover shall be planted on or before **September 15** with the ground cover established by **October 15**. As an alternative, if a protective ground cover is not established by **October 15**, the open areas shall be protected through the winter with straw mulch, erosion blankets, the installation of additional straw wattles, or other method(s) approved by the City.

Seeding. Seeding shall be as follows, or as recommended by a California Licensed Landscape Architect or a Certified Professional Soil Erosion and Sediment Control Specialist.

SEED MIX ONE (Application rate = 40 kg/ha or 35 lb/ac)		**SEED MIX TWO** Application rate=40 kg/ha or 35 lbs/acre)	
blando brome	40%	blando brome	35%
zorro annual fescue	8%	rose clover	20%
lana vetch	12%	annual ryegrass	15%
rose clover	15%	crimson clover	10%
crimson clover	15%	creeping red fescue	5%
sub clover	10%	zorro annual fescue	5%
TOTAL	100%	TOTAL	100%

Fertilizer

12-12-12 450 kg/ha (400 lb/ac), or 15-15-15 340 kg/ha (300 lb/ac), or 16-20-0 340 kg/ha (300 lb/ac).

Mulch

Straw 3,400 kg/ha (3,000 lb/ac), or wood fiber (if hydroseeded) 2,300 kg/ha (2,000 lb/ac)

6. Protection Measure Removal

The erosion prevention and sediment control measures shall remain in place and be maintained in good condition until all disturbed soil areas are permanently stabilized by installation and establishment of landscaping, grass, mulching, or are otherwise covered and protected from erosion.

7. Standard Erosion Control Measures Submittal Requirements

The submittal for the proposed use of **Standard Erosion Control Measures** can be brief and shall include a plot plan or grading plan, providing the following information:

- Site location; assessor parcel number and address (if known).
- Property owners name, address and phone number, including emergency number.
- Building contractors name, address and phone number.
- General locations where measures will be installed.
- Installation details shall be attached to the plot plan (these can be copied from the Standard references).

8. Review and Field Checks of Standard Erosion Control Measures

The City will review the submitted grading or plot plan with Standard Erosion and Sediment Control Measures to make sure that all information requested is on the plans. If the project is to be completed less than 2 months before the rainy season (after August 15) the measures must be shown on the plans to avoid any problems in the future if the schedule should stop for some unforeseen circumstance.

Depending upon the timing of the project, there will be one to four field inspections.

Projects may require a Pre-Construction meeting between the Applicant and the City Inspection staff to discuss proposed erosion control and stormwater protection measures, implementation schedule, frequency and nature of inspections. Inspection staff will forward copies of all inspection documentation completed by deputy inspectors if deemed necessary (some inspections may be conducted by the Engineer or third party independent inspectors).

If the project is completed over the summer (by August 15) and includes landscaping, the regular final inspection will include the Standard Erosion Control Measures inspection. If the project is not completed by the onset of the rainy season, then a specific inspection will be made between September 15 and October 1. All temporary erosion and sediment control measures must be purchased and mobilized on-site by October 1 (including additional sand bags, covered straw bales and straw wattles or silt fencing for emergency and remedial repairs and maintenance) , and are to be installed by October 15. Other field inspections will be made to assure that revegetation has occurred and is growing, and adequate maintenance is taking place (various times from early November through March).

9. Detailed Erosion Control Plan Guidelines

A Detailed Erosion Control Plan submittal will be required for sites greater than 1.0 acre, or for buildings or other site disturbance proposed for slopes over 15%, or projects located within critical areas, as determined on a case-by-case basis. A copy of the Notice of Intent (NOI) that was submitted to the Calif. State Regional Water Quality Control Board must accompany the Detailed Erosion Control Plan. The Detailed Erosion Control Plan submittal must comply with all of the requirements for the Standard Erosion Control Measures and also include a written narrative and detailed site plan and typical drawings and details.

10. Narrative

Written narrative (to be included with Plan) on letterhead or signed plan sheet of person responsible for Plan preparation should include:

- Proposed schedule of grading activities and infrastructure milestones in a chronological format, including dates for beginning of phased grading areas and dates that areas will be stabilized. For example, easterly slope rough grading complete, streets graded, storm sewers and inlets installed, paving complete on Street X, creek outfall structure complete, etc.
- Description of potentially affected areas adjacent to site.
- Description of soils, geology, vegetation and nearby creeks.
- Description of critical areas of high erodibility potential; unstable slopes.
- Description of erosion control measures on slopes, lots, streets, etc.
- Description of sediment detention basins, including design assumption and calculations.
- Description of emergency erosion and sediment control measures to be implemented for storms within 48 hours.
- Name and 24 hour telephone number of person responsible for erosion and sediment control.

11. Site Plan

The site plan shall include the following information:

- Scale, north arrow and legend.
- Vicinity map.

- Watershed boundaries within project.
- Contours and spot elevations indicating runoff patterns before and after grading.
- Critical areas within or near the project (creeks, wetlands, landslides, steep slopes, etc.).
- Limits of clearing and grading.
- Creek top of bank, delineation of Creek Buffer Areas A and B and existing vegetation and any special trees/wetlands to be fenced and protected.
- Location and types of temporary and permanent erosion and sediment control measures.
- Site access locations.
- Signature block for plan preparer.
- Additional plans that may be needed to illustrate narrative addressing stages of construction such as street graded-no storm drains; storm system installed; streets paved; etc.

12. General Erosion and Sediment Control Notes to be Included on Site Plan

The following notes and information should be included on the plan sheets of the Detailed Erosion Control Plan:

- Contractor/Owner: name, address, phone number. It shall be the owner's responsibility to maintain control of the entire construction operations and to keep the entire site in compliance with the soil Erosion Control Plan.

- Civil Engineer, Landscape Architect, or Detailed Erosion Control Plan preparer: name, address, phone number.

- Construction Superintendent: name, address, 24-hour phone number.

- Contractor: name, address, 24-hour phone number.

- This Plan is intended to be used for interim erosion and sediment control only and is not to be used for final elevations or permanent improvements.

- Owner/contractor shall be responsible for monitoring erosion and sediment control measures prior, during, and after storm events. Monitoring includes maintaining a file documenting on-site inspections, problems encountered, corrective actions, and notes and a red-line map of remedial implementation measures.

- Reasonable care shall be taken when hauling any earth, sand, gravel, stone, debris or any hazardous substance over any public street, alley or other public place. Should any blow, spill, or track over and upon said public or adjacent private property, immediate clean-up shall occur.

- Construction entrances shall be installed prior to commencement of grading. All construction traffic entering onto the paved roads must cross the stabilized construction entranceway.

- Sanitary facilities shall be maintained on-site as appropriate.

- During the rainy season, all paved areas shall be kept clear of earth material and debris. All earth stockpiles over 1.5 m^3 (2.0 yd^3) shall be covered by a tarp and ringed with straw bales or silt fencing. The site shall be maintained so as to minimize sediment-laden runoff to any storm drainage system including existing drainage swales and water courses.

- Construction operations shall be carried out in such a manner that erosion and water pollution will be minimized. State and local laws concerning pollution abatement shall be complied with.

- The facilities shown on this plan are designed to control erosion and sediment during the rainy season, **November 1 to April 15.** Facilities are to be operable prior to October 15 of any year.

Grading operations during the rainy season which leave denuded slopes shall be protected with erosion control measures immediately following grading on the slopes. This will include use of straw mulch and tackifier, and erosion control blankets.

- This plan covers only the first winter following grading with assumed site conditions as shown on the Detailed Erosion Control Plan. **Prior to September 15**, the completion of site improvement shall be evaluated and revisions made to this Plan as necessary with the approval of the City. Plans are to be resubmitted for approval prior to **August 15** of each subsequent year until site improvements are accepted by the City.

13. Procedures for Review and Inspection of Detailed Erosion Control Plans

Submission of a **Detailed Erosion Control Plan** must accompany any applicable Public Works, Grading, or Building Permit application. The Public Works Department/Engineering Division will review the submittal in conjunction with the City Community Development Department for compliance with their Procedures for the Control of Runoff into Storm Drains and Watercourses for Public Works construction polluted discharge control requirements..

Work that is within the creek (top of bank to top of bank) will be reviewed by Public Works, but if any included work is on private property, the submittal will also be reviewed by the City's Building and Safety Division (who normally coordinates the routing of projects). Following plan approval, the City Building or Public Works Inspector will: (1) arrange a Pre-Construction meeting to review project scheduling, and proposed erosion control and stormwater management plans and procedures, and implementation dates, (2) make a specific pre-winter erosion control inspection **(by October 15)** to verify that all temporary erosion control measures have been installed according to the approved plan, (3) make at least one interim inspection during the winter rainy period to insure adequate on-going maintenance and repair of the erosion control measures, and that appropriate documentation of remedial measures has occurred, and (4) make a final inspection at project construction completion to verify that all required permanent erosion control measures, including any planting and revegetation elements have been installed according to plan. Compliance inspections will be scheduled by the Applicant/Contractor. On-site building contractor documentation of all on-going Detailed Erosion Control Plan site inspections, maintenance and repair both before and following significant rainfall events will also be checked during these visits (before and after storm-event inspection/repair documentation). Inspections will include:

Initial Inspection. On a site development or any other type of project, the erosion prevention and sediment control measures shall be installed prior to the start of any permitted activity. The permittee shall call the City prior to the foundation inspection of a building for an inspection of the erosion prevention and sediment control measures.

Owner Inspections and Inspection Logs. The owner shall be required to inspect erosion prevention and sediment control measures and provide information on log forms. Inspections shall be completed as required by the Detailed Erosion Control Plan. Logs are to be maintained on-site and available to City inspectors upon request.

Final Inspection. A final erosion control inspection shall be required prior to the sale or conveyance to new property owner(s) or prior to the issuance of a Certificate of Compliance, Occupancy or other final checkpoint, to verify that temporary erosion prevention and sediment control measures have been removed and that permanent measures have been satisfactorily installed.

Copies of Inspections conducted by others shall be submitted to the City's Building and Safety Division in a timely manner following the conclusion of each inspection.

14. Maintenance

The permittee shall maintain the facilities and erosion control measures prescribed in the approved ***Detailed Erosion Control Plan*** so as to continue to be effective during the construction phase, post construction phase, establishment of permanent vegetation, or any other permitted activity. If the facilities and techniques approved in a Detailed Erosion Control Plan are not effective or sufficient as determined by a City site inspection, the permittee shall submit a revised Plan within three working days of written notification by the City of unacceptable site erosion conditions. Upon approval of the revised plan by the City, the permittee shall immediately implement the additional facilities and measures included in the revised plan. In cases where significant erosion is likely to occur, the City may require that the applicant install interim control measures prior to submittal of the revised Erosion Control Plan.

Section 3
Erosion and Sediment Control BMPs

3.1 Erosion Control

Erosion control is any source control practice that protects the soil surface and prevents soil particles from being detached by rainfall, flowing water, or wind. Erosion control is also referred to as soil stabilization. Erosion control consists of preparing the soil surface and implementing one or more of the BMPs shown in Table 3-1, to disturbed soil areas.

Table 3-1 Erosion Control BMPs

BMP#	BMP Name
EC-1	Scheduling
EC-2	Preservation of Existing Vegetation
EC-3	Hydraulic Mulch
EC-4	Hydroseeding
EC-5	Soil Binders
EC-6	Straw Mulch
EC-7	Geotextiles & Mats
EC-8	Wood Mulching
EC-9	Earth Dikes and Drainage Swales
EC-10	Velocity Dissipation Devices
EC-11	Slope Drains
EC-12	Streambank Stabilization
EC-13	Polyacrylamide

All inactive soil-disturbed areas on the project site, and most active areas prior to the onset of rain, must be protected from erosion. Soil disturbed areas may include relatively flat areas as well as slopes. Typically, steep slopes and large exposed areas require the most robust erosion controls; flatter slopes and smaller areas still require protection, but less costly materials may be appropriate for these areas, allowing savings to be directed to the more robust BMPs for steep slopes and large exposed areas. To be effective, erosion control BMPs must be implemented at slopes and disturbed areas to protect them from concentrated flows.

Some erosion control BMPs can be used effectively to temporarily prevent erosion by concentrated flows. These BMPs, used alone or in combination, prevent erosion by intercepting, diverting, conveying, and discharging concentrated flows in a manner that prevents soil detachment and transport. Temporary concentrated flow conveyance controls may be required to direct run-on around or through the project in a non-erodible fashion. Temporary concentrated flow conveyance controls include the following BMPs:

- EC-9, Earth Dikes and Drainage Swales
- EC-10, Velocity Dissipation Devices
- EC-11, Slope Drains

3.2 Sediment Control

Sediment control is any practice that traps soil particles after they have been detached and moved by rain, flowing water, or wind. Sediment control measures are usually passive systems that rely on filtering or settling the particles out of the water or wind that is transporting them.

Sediment control practices include the BMPs listed in Table 3-2.

Table 3-2 Temporary Sediment Control BMPs

BMP#	BMP Name
SE-1	Silt Fence
SE-2	Sediment Basin
SE-3	Sediment Trap
SE-4	Check Dam
SE-5	Fiber Rolls
SE-6	Gravel Bag Berm
SE-7	Street Sweeping and Vacuuming
SE-8	Sandbag Barrier
SE-9	Straw Bale Barrier
SE-10	Storm Drain Inlet Protection
SE-11	Chemical Treatment

Sediment control BMPs include those practices that intercept and slow or detain the flow of stormwater to allow sediment to settle and be trapped. Sediment control practices can consist of installing linear sediment barriers (such as silt fence, sandbag barrier, and straw bale barrier); providing fiber rolls, gravel bag berms, or check dams to break up slope length or flow; or constructing a sediment trap or sediment basin. Linear sediment barriers are typically placed below the toe of exposed and erodible slopes, down-slope of exposed soil areas, around soil stockpiles, and at other appropriate locations along the site perimeter.

A few BMPs may control both sediment and erosion, for example, fiber rolls and sand bag barriers. The authors of this handbook have classified these BMPs as either erosion control (EC) or sediment control (SC) based on the authors opinion on the BMPs most common and effective use.

Sediment control BMPs are most effective when used in conjunction with erosion control BMPs. The combination of erosion control and sediment control is usually the most effective means to prevent sediment from leaving the project site and potentially entering storm drains or receiving waters. Under most conditions, the General Permit requires that the discharger implement an effective combination of erosion and sediment controls.

Under limited circumstances, sediment control, alone may be appropriate. For example, applying erosion control BMPs to an area where excavation, filling, compaction, or grading is currently under way may not be feasible when storms come unexpectedly. Use of sediment controls by establishing perimeter control on these areas may be appropriate and allowable under the General Permit provided the following conditions are met.

- Weather monitoring is under way.
- Inactive soil-disturbed areas have been protected with an effective combination of erosion and sediment controls.

- An adequate supply of sediment control materials are stored on-site and there are sufficient forces of labor and equipment available to implement sediment controls on the active area prior to the onset of rain.
- The SWPPP adequately describes the methods to protect active areas.

3.3 Wind Erosion Control

Wind erosion control consists of applying water or other dust palliatives to prevent or alleviate dust nuisance. Wind erosion control best management practices (BMPs) are shown in Table 3-3.

Table 3-3 Wind Erosion Control BMPs

BMP#	BMP Name
WE-1	Wind Erosion Control

Other BMPs that are sometimes applied to disturbed soil areas in order to control wind erosion are BMPs EC-2 through EC-7, shown in Section 3.1 of this Manual. Be advised that many of the dust palliatives may contain compounds that have an unknown effect on stormwater. A sampling and analysis protocol to test for stormwater contamination from exposure to such compounds is required in the SWPPP.

3.4 Tracking Control BMPs

Tracking control consists of preventing or reducing the tracking of sediment off-site by vehicles leaving the construction area. Tracking control best management practices (BMPs) are shown in Table 3-4.

Table 3-4 Temporary Tracking Control BMPs

BMP #	BMP Name
TR-1	Stabilized Construction Entrance/ Exit
TR-2	Stabilized Construction Roadway
TR-3	Entrance/Outlet Tire Wash

Attention to control of tracking sediment off site is highly recommended, as dirty streets and roads near a construction site create a nuisance to the public and generate constituent complaints to elected officials and regulators. These complaints often result in immediate inspections and regulatory actions.

3.5 Erosion and Sediment Control BMP Fact Sheet Format

A BMP fact sheet is a short document that gives all the information about a particular BMP. Typically, each fact sheet contains the information outlined in Figure 3-1. Completed fact sheets for each of the above activities are provided in Section 3.6.

The fact sheets also contain side bar presentations with information on BMP objectives, targeted constituents, removal effectiveness, and potential alternatives.

EC-xx Example Fact Sheet

Description and Purpose

Suitable Applications

Limitations

Implementation

Costs

Inspection and Maintenance

References

Figure 3-1
Example Fact Sheet

3.6 BMP Fact Sheets

BMP fact sheets for erosion, sediment, wind, and tracking controls follow. The BMP fact sheets are individually page numbered and are suitable for photocopying and inclusion in SWPPPs. Fresh copies of the fact sheets can be individually downloaded from the California Stormwater BMP Handbook web site at www.cabmphandbooks.com.